UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,738	07/28/2003	Naga A. Ayachitula	SVL920030044US1	4034

46158 7590 02/05/2008	EXAMINER
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ART UNIT	PAPER NUMBER
2163	

MAIL DATE	DELIVERY MODE
02/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
	10/628,738	AYACHITULA ET AL.
Office Action Summary	Examiner	Art Unit	
	Sheree N. Brown	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *10/31/07*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-9 and 15-42* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-9 and 15-42* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This communication is responsive to the Request for Continued Examination

filed on 10/31/2007. Claims 1-9 and 15-42 are pending and presented for examination.

Claims 10-14 have been cancelled. Claims 1, 6, 15, 26, 36, 39 and 40 have been amended.

Claims 1, 15, 24, 36, 39 and 40 are the independent claims and the remaining claims are

the dependent.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-9 and 15-42 are rejected under 35 U.S.C. 103 (a) as being unpatentable

over anticipated by Lichtman et al (US Patent No. 5,793,979, Date of Patent: August 11,

1998, hereinafter, Lichtman) in view of Waldo et al (US Patent No. 6,016,500, Date of

Patent: January 18, 2000, hereinafter Waldo).

Claims 1, 24, 36 and 40:

Regarding Claims 1, 24, 36 and 40, Lichtman discloses the method comprising:

- **using the resource deallocation module, detecting an impending**

     execution of the automatic memory management algorithm (column 43,

     lines 11-14, in response to a "deallocate" instruction by the configuration manager, the

assignment element deletes the resource assignments in the assigned resource table for

the designated device, which is equivalent to "using the resource deallocation module

detecting an impending execution of the automatic memory management algorithm",

Lichtman);

responsive to the detecting, and prior to executing the automatic

memory management algorithm; accessing, by the resource

deallocation module, said session object of the user session (column 4o,

lines 36-40, wherein the configuration manager instructs the arbitrators to free the

resource elements assigned to the removed device, wherein the resource elements

previously assigned for use by the removed device become available for use by other

devices of the computer as required by future configuration operations, wherein this is

interpreted to be equivalent to "responsive to the detecting, accessing, by the resource

deallocation module, an object of the user session", Lichtman);

identifying, by the resource deallocation module, one or more obsolete

external resource references of said session object, wherein said one or

more obsolete external resource references have not been released by

said session object (column 40, lines 40-43, wherein the configuration manager

uploads the device driver corresponding to the removed device, which is interpreted to

be deallocating allocated external resource of each object of a user session and wherein

it locates data objects that no longer can be used, which corresponds to the "removed

device", and this device driver becomes available for use by other compatible devices,

wherein overall this is interpreted to be equivalent to "identifying, by the resource

deallocation module, one or more external resource references of said object"

Lichtman);

using the resource deallocation module, releasing said one or more obsolete external resource references by a set of rules for said session object (column 43, lines 16-19, . wherein a representative instruction for the memory arbitrator is the command FREE (start=2000 h, end =2200 h), which clears the assignment for the allocated memory extending between 2000h and 2200 h, which is interpreted to be equivalent to "using the resource deallocation module, releasing said one or more external resource references by a set of rules for said object", Lichtman);

and repeating the accessing, identifying, and releasing, by the resource deallocation module, for each session object of the user session (column 21, lines 29-41, wherein upon completing collection of device information from the detected device, an inquiry is conducted to determine whether device information has been obtained from all of the devices connected to the interface bus and if the answer is negative, the "NO" the process continues to the collection of device information from those remaining devices and in contrast, the "YES" branch is followed to enable the sequence of identifying device drivers, arbitrating and allocating the resources 14, and loading the identified device drivers for the detected devices 20 of the interface bus 17' and this process will be repeated until all of the system busses 18 within the computer 8 are detected, wherein this is interpreted to be equivalent to "repeating the accessing, identifying, and releasing, by the resource deallocation module, for each object of the user session", Lichtman).

Lichtman discloses the above limitations. However, Lichtman does not disclose

wherein the garbage collector for removing session objects created for the user session,

wherein said session objects of the user session are not referenced by a remaining object

and which do not reference one or more external resources. On the other hand, Waldo

does disclose "the garbage collector for removing a session object created for the user

session, wherein said session object of the user session is not referenced by a remaining

object and which does not reference one or more external resources" (See Figure 4, Item

420 & Column 8, Lines 20-35).

It would have been obvious to one of the ordinary skill in the art at the time of

the invention to incorporate Waldo teachings into Lichtman system. A skilled artisan

would have been motivated to combine as suggest by Waldo [column 6, lines 5-7],

establishing and implementing an improved method for "freeing" memory and

preventing memory leaks.

Claims 2 and 25:

Regarding claims 2 and 25, Lichtman discloses the above limitations. However,

Lichtman does not disclose wherein performing the accessing, identifying, releasing,

and repeating as a Listener method belonging to a Java MyListener class in a Java

environment; and registering the Listener method with the user session.

On the other hand, Waldo does disclose wherein performing the accessing, identifying,

releasing, and repeating as a Listener method belonging to a Java MyListener class in a

Java environment (column 6, lines 5-7, wherein the method invocation, i.e. MI, may

consist of a number of software modules preferably written in the JAVA programming

language, and its inherent and known that JAVA provides it own classes, wherein

everything is an object and all code is written inside a class and

column 15, lines 12-62, wherein "an object is an instance of a Class ......

", and so forth, in which a basic class in Java programming language is shown and

wherein a Listener Method is interpreted to process specific classes of events, with

individual listener objects being assigned to specific UI objects; and Figures 10 and 11,

which illustrates wherein a user is notified that a session is about to expire, and refer to

columns 17 and 18, wherein these figures are discussed and interpreted to correspond

to "the session Listener instance is notified an and operates to gracefully release

resources held by the user session objects of the about to expire user session" as defined

within applicant's specification on page 9, lines 10-12, Waldo); and registering the

Listener method with the user session (column 16, lines 52-59, respectively, Waldo).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to incorporate Waldo teachings into Lichtman system. A skilled artisan

would have been motivated to combine as suggest by Waldo [column 6, lines 5-7],

establishing and implementing an improved method for "freeing" memory and

preventing memory leaks.

Claims 3 and 26:

Regarding claims 3 and 26, the combination of Lichtman in view of Waldo teaches

wherein the registering includes setting a session attribute to correspond to an instance

of the Listener method (page 16, lines 53-59, wherein the types of access include read

access, and write access, allocation access, re-allocation access and sub- block access,

wherein the privilege fields indicates the privilege level of the user or the client to form

a valid request the client request much contain both the requested storage location and

the desired lease period, which is interpreted to be equivalent to "registering includes

setting a session attribute to correspond to an instance of the

Claims 4 and 27:

Regarding claims 4 and 27, the combination of Lichtman in view of Waldo teaches

wherein the detecting includes notifying the registered Listener method of the

impending expiration of the user session (page 17, lines 13-14, wherein if the client has

not completed its use of the file, the client determines if the lease is about to expire,

Waldo).

Claims 5 and 28:

Regarding claims 5 and 28, the combination of Lichtman in view of Waldo teaches

wherein the detecting includes detecting an impending expiration of the user session

(Figure lO, diagrams 10008, wherein if the client has not completed its use of the file, the

client determines if the lease is about to expire and wherein its further defined in

column 17, lines 14-2o, wherein the client performs a step of invoking the get Duration

method and determining whether the remaining time is within a predetermined

threshold, and if the lease is not about to expire processing continues and if the lease is

about to expire the client sends a renew request to the server and so forth, Waldo).

Claims 6 and 29:

Regarding claims 6, the combination of Lichtman in view of Waldo teaches further

including executing the automatic memory management algorithm by said garbage

collector (See Waldo Figure 4, Item 420 & Column 8, Lines 20-35) to remove said session

objects created for said user session (Figure 10, diagram 10006, wherein done with file is

defined, in which the yes, is interpreted to be closing the file, Waldo).

Claims 7 and 30:

Regarding claims 7 and 30, the combination of Lichtman in view of Waldo teaches

wherein the identifying includes identifying a file resource (Figure 10, diagram 10005

and column 17, lines 6-7, Waldo); and the releasing includes closing said file resource

(Figure 10, diagram 10006, wherein done with file is defined, in which the yes, is

interpreted to be closing the file, Waldo).

Claims 8 and 31:

Regarding claims 8 and 31, the combination of Lichtman in view of Waldo teaches

wherein the identifying includes identifying an allocated resource (column 16, lines 16-

19, wherein the resources which are used by the devices during computing operation

are allocated based upon the device information, Lichtman); and the releasing includes

deallocating the allocated resource (column 43, lines 11-14, Lichtman).

Claims 9 and 32:

Regarding claims 9 and 32, the combination of Lichtman in view of Waldo teaches

wherein the accessing of said session object of the user session includes obtaining an

object identifier corresponding to said session object from the object graph (column 5,

lines 2-12, wherein a computer database maintained by the computer or from the user

via disk containing the device driver, and the device driver is obtained by accessing a

select program file stored on either a fixed disk or another type of mass memory storage

device and wherein the computer database can contain device information associated

with a particular device and so forth, Lichtman); and retrieving said object using the

object identifier (column 8, lines 21-26, wherein the logical configuration data can be

retrieved from the particular device by reading the logical configuration data from the

memory storage device for that device and the logical configuration data is thereafter

stored within the computer memory and is associated with the device identification

code for the particular device, Lichtman).

Claims 15 and 39:

Regarding Claims 15 and 39, Lichtman discloses a system comprising:

- **a software program configured to initiate, process, and terminate user**

    sessions (column 3, lines 26-29, wherein the present invention provides a system for

configuring the hardware and software components of a computer system by optimally

allocating system resources for use by computer devices; column 11, lines 61-64,

wherein comprises a set of computer programs that control the internal functions of the

computer systems thereby allowing the computer to run application software; column

16, lines 23-26, wherein in response to this allocation of the resources, the device driver

for each of the devices is loaded and the devices are subsequently activated for

operation with the computer, thereby terminating this configuration; columns 28-29,

lines 66-67 and lines 1-8, column 29, lines 22-29, wherein the software archive contains

information related to location and identify of various programs files, including device

drivers, wherein the hardware archive can contain hardware related information

including the identity of detected devices and column 35, lines 44-50, wherein the event

detect element responds to commands contained in certain instruction signals from the

configuration manager a and these commands typically instruct the event detect

element to conduct specified query-type operations, including deletion of device

information stored within a particular device node and to start or to terminate

designated tasks, wherein overall this cited information corresponds to and is

equivalent to "a software program configured to initiate, process, and terminate user

sessions", Lichtman);

-       **an object graph defining an interrelationship between objects of said**

user session (column 15, lines 54-64, respectively and column 40, lines 44-67,

wherein the enumerator detects the connection of a new device to its assigned system

bus and the detection of this event is reported to the configuration manager and, in

response, the configuration manager instructs the reporting enumerator to enumerate

the devices on this affected system bus and wherein this enumerator responds to the

enumerate instruction by collecting device information from each of the devices on the

affected system bus and for the newly installed device, a device node corresponding to

this device is added to the hardware tree and wherein if the new device represents a

component which has not been previously installed with the computer 8, this new

device information is stored in the registry and upon completion of the enumeration

task, appropriate device drivers are identified for use with the detected .devices and the

elements for the resources are subsequently allocated and the identified device drivers

are loaded, wherein the above-described process enables the installation of a new

device within the computer without substantial intervention by the user, which is

interpreted to be equivalent to "an object graph defining an interrelationship between

objects of said user session", Lichtman);

-       **a resource deallocation module linked to the software program and**

        responsive to an impending termination of said user session to

        deallocate obsolete allocated external resources of each object of one or

        more objects created for a user session wherein said obsolete allocated

        external resources have not been released by said objects (REFER to

        claims 1, 24, and 30, wherein this limitation is substantially the same/or similar and

        therefore rejected under the same grounds, Lichtman);

-       **and an automatic memory management garbage collector module**

        invoked subsequent to a completion of the deallocation performed by

        the resource deallocation module for removing each of said one or

        more objects which is not referenced by a remaining of said one or

        more objects and which does not reference one or more of said

allocated external resources (REFER to claims 1, 24, and 30, wherein this

limitation is substantially the same/or similar and therefore rejected under the same

grounds, Lichtman).

Claim 16:

Regarding claim 16, the combination of Lichtman in view of Waldo teaches a Java

virtual machine implementing the software program (column 6, lines 5-7, wherein the MI

component may consist of a number of software modules preferably written in Java TM programming

language, Waldo), **the resource deallocation module** (REFER to claims 1, 24, 36, and 40, wherein

this limitation has already been addressed, Lichtman), **and the automatic memory management**

module (REFER to claims 1, 24, 36, and 4o, wherein this limitation has already been addressed,

Lichtman). It would have been obvious to one of the ordinary skill in the art at the time

of the invention to incorporate Lichtman teachings for detecting objects that are no

longer used to free up space within memory to improve a system performance.

Claim 17:

Regarding claim 17, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module includes a deallocation listener method adapted to

deallocate the allocated external resources of each object of said user session responsive

to a notification of the impending termination of said user session (column 3, lines 61-67,

wherein such failures can take the form of computer or application failure or network failure that prevent

delivery of messages notifying the garbage collection system that a resource is no longer being referenced

and column 18, lines 11-31, wherein the server determines whether it has received a renew request from

the client, if the renew request has been received, the server renews the lease, and if, however, a renew

has not been received, the server determines if a cancel request has been received by the client invoking

the cancel method, and if the client invoked the cancel method, the server cancels the lease by deleting

the object stored in step 11010 from the Java space, and if this is the last outstanding lease on the file, the

server deletes the file, and if a cancel request was not received, the server determines if the lease has

expired and if the lease has not expired, processing continues, wherein however, if the lease has expired,

the server knows that a failure has occurred and therefore invokes the recover method on the object in the

Java space for the client with the lease that terminated, Waldo).

Claim 18:

Regarding claim 18, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module is linked to the software program by registration of the

deallocation listener method with said user session (column 8, lines 11-20, respectively,

Lichtman).

Claim 19:

Regarding claim 19, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module is linked to the software program by an assignment of an

attribute of said user session to the deallocation listener method (column 8, lines 5o-53,

wherein the arbitrator also includes an assignment element for assigning the particular

resource element for use by the selected device in response to determining that the

particular resource element is available for use by the selected device, Lichtman).

Claim 20:

Regarding claim 20, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module being adapted to access the object graph to identify the

objects of the user session (column 11, lines 47-54, wherein the application call processor uses the

grant period to update recorded grant period and to determine when the resource corresponding to the

reference of its dirty call may be reclaimed, wherein the server call processor 1131 also monitors the

reference counts and grant periods corresponding to references for resources that it manages, Waldo).

Claim 21:

Regarding claim 21, the combination of Lichtman in view of Waldo teaches wherein the

automatic memory management module is invoked by the software program to process

a plurality of user sessions including said user session (column 16, lines 2-15, wherein data

processing system is defined along with its parts and wherein the client request access to one or more of

the files by requesting a lease from the server, Waldo).

Claim 22:

Regarding claim 22, the combination of Lichtman in view of Waldo teaches wherein the

automatic memory management module is invoked by an operating system to process

software including said software program that operate under said operating system

(Figure 8, all feature, wherein it illustrates a client platform and a sever platform and column 3, lines 1-7,

wherein distributed garbage collection describes a facility provided by a language or runtime system for

distributed systems that automatically manages resources used by an application or group of application

running on different computers in a network, Waldo).

Claim 23:

Regarding claim 23, the combination of Lichtman in view of Waldo teaches wherein the

resource deallocation module is integrated with the automatic memory management

module as a single unitary memory management unit that executes prior to the

termination of said user session (page 17, lines 35-49, Waldo).

Claims 33, 37, and 41:

Regarding Claims 33, 37, and 41, the combination of Lichtman in view of Waldo teaches

identifying said session object of the user session; and, determining an object type of

said session object (column 15, lines 9-25, respectively, Waldo).

Claims 34, 38, and 42:

Regarding Claims 34, 38, and 42, the combination of Lichtman in view of Waldo teaches

wherein said releasing includes releasing said one or more external resource references

by a set of rules for said object, including rules based on said object type (REFER to

claims 1, 24, 36 and 40, wherein this limitation is substantially the same/or similar and

therefore rejected under the same grounds, Lichtman).

Claim 35:

Regarding Claim 35, the combination of Lichtman in view of Waldo teaches wherein

said one or more external resource references are associated with at least one of file

handles, database connections, sockets, and threads (column 7, lines 3-6, wherein a

device installation or removal can be detected by intercepting a particular interrupt

signal or by periodically polling all of the available sockets of the bus to determine the

installed devices, Lichtman).

Prior Art Made of Record

4.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Waldo et al (US Patent No. 6,016, 500)
Lichtman et al (US Patent No. 5,793,979)

Response to Arguments

5.   Applicant's arguments filed 10/31/2007 have been fully considered but they are

not persuasive.

Applicant Argument #1:

Applicant argues on page 13, "In accordance with the above, therefore,

applicants respectfully submit that since Lichtman does not disclose a garbage collector

as noted by the Examiner at the bottom of page 4 of the Office Action, Lichtman cannot

possibly "detect an impending execution of the automatic memory management

algorithm" by the garbage collector as set out in independent claim 1 of the present

application. Waldo uses the expression "garbage collector" but the only suggestion to

combine it with Lichtman comes from the pending claims. As argued previously by

applicants, the actions of Lichtman's assignment element cited in the Office Action are

in response to a "deallocate" instruction by a configuration manager. This is not

equivalent to "detecting an impending execution of the automatic memory".

Examiner Response to Argument #1:

Examiner is not persuaded. Examiner maintains the combination of Waldo and

Lichtman teaches the above mentioned limitations. Specifically, Lichtman teaching in

Column 43, lines 11-14 meets applicant teaching of "detecting an impending execution

of the automatic memory management algorithm" and Waldo goes on to teach this

garbage collector in Figure 4, Item 420 & Column 8, lines 20-35. Hence, the combination

of the two references teaches applicant's claim limitation.

MPEP § 2106 states Office personnel are to give claims their broadest reasonable

interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55,

44 USPQ2d 1023, 1027-28 (Fed Cir. 1997). Consequently, examiner maintains the

rejection.

Contact Information

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sheree N. Brown whose telephone number is (571) 272-

4229. The examiner can normally be reached on Monday-Friday 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

7.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Brown
Patent Examiner, AU 2163
Technology Center 2100
January 31, 2008

_1/1/08_

Hung Vy

For SPE Don Wong